

1 SPA CAPSULE

2 FIELD OF THE INVENTION

3 This invention relates to the field of physical therapy and in particular, to  
4 devices used to relieve stress and soothe the senses by applying desirable  
5 sensations to the body.  
6

7 BACKGROUND OF THE INVENTION

8 The use of aromatic oils, fragrances, baths and massage for personal well being  
9 is quite ancient. Further, the viewing of beautiful pictures and listening to  
10 music. has long been recognized as beneficial to the mood of people.

11 However, in the modern world, these past times have become less accessible to  
12 most of the people either because of the lack of artisans capable of performing  
13 the necessary acts or the expense and time required to attend such facilities.

14 To combat these modern day societal shortcomings, machines have been employed in  
15 an attempt to relieve the stresses of the day. There are different mechanical  
16 devices for massage, for tanning and for simulated weightlessness.

17 What is lacking in the art is a comprehensive approach to the overall benefits  
18 of using several different biological senses to ameliorate the effects of stress  
19 and trauma.  
20

21 DESCRIPTION OF THE PRIOR ART

22 Known prior art exists in the field of hydrotherapy including devices related to

1 water massage.

2 For example, expired U.S. Pat. No. 4,112,943 discloses the use of  
3 an enclosed bag having a pulsed flow of water into the bag. The device may be  
4 placed on the body at a desired treatment location for muscle injuries and the  
5 like.

6 U.S. Pat. Nos. 4,751,919, 4,908,016 and 5,158,076 disclose a water jet massage  
7 apparatus and method for its use which supports a supine person covered with a waterproof  
8 blanket. The water massage is carried out without the person becoming wet. The device  
9 has an elongated lid having top, front, rear and opposite side walls which cooperate with a  
10 water-proof flexible bottom wall to form a watertight chamber therebetween. A water  
11 supply manifold situated within the watertight chamber, and containing a plurality of spray  
12 heads, traverses a path along the supine/sitting body of the wearer. In order for the water  
13 which exits the manifold to run down to side gutters, both the lid and bench must be  
14 inclined, so that water returns by gravity to the lowermost portion of the chamber for return  
15 via a spent water return line to a holding tank.

16 U.S. Patent No. 6,428,466, the contents of which is entirely incorporated by  
17 reference herein, patentably distinguishes over that which is disclosed in the '919 and  
18 related patents (as listed supra). The '466 patent discloses a spa capsule which contains a  
19 movable spray head enclosed within a water-proof covering. The cooperation of the spray  
20 head and water-proof covering result in a device which eliminates any need for an  
21 elongated watertight chamber, nor does the '466 patent require that the chamber and bench  
22 be inclined for water runoff and discharge. Furthermore, since the water is not released

1 onto the elongated surface of the waterproof fabric, as is required in the '919 and related  
2 patents, heat dissipation into the surrounding environment is dramatically reduced, thereby  
3 substantially reducing heating requirements. Since the design of the '466 device is so  
4 efficient, from a heat loss efficiency standpoint, the instant inventors have determined that  
5 it would be desirable to incorporate heat exchange means within the system to afford the  
6 user an ability to adjust the water temperature, as appropriate, in order to maximize their  
7 individual comfort requirements.

8 Thus, the instant invention is directed toward an improved spa capsule constructed  
9 and arranged to maintain the water stream used for hydro-massage at a particular  
10 temperature.

## 11 12 SUMMARY OF THE INVENTION

13 In a preferred embodiment, a spa capsule is formed from a cabinet having a  
14 hinged lid forming an enclosed space for accommodating a person. Within the  
15 enclosed space an environment is simulated by stimulating the auditory,  
16 olfactory, optic and tactile senses of the person.

17 The spa capsule partially encloses a person's body to provide a simulated  
18 environment by stimulating the olfactory senses by inducing certain aromatic  
19 substances to release odors within the enclosed space. The capsule includes a  
20 bed extending from the head of a person to the feet providing support in the  
21 prone or supine position. The inclination of this bed is completely adjustable subject to the  
22 desire of the user. The enclosure includes a means for stimulating the

1 auditory senses by conveying certain sounds into the enclosed space and  
2 stimulating the optic senses by conveying visual images into the enclosed space  
3 either simultaneously, sequentially or in various sequences.

4 The tactile senses are addressed by a massage with jets of water applying gentle  
5 pressure to the body of the prone or supine user. The jets are contained within  
6 a flexible enclosure to allow for a dry massage. The water jet enclosure closely  
7 contacts the body and is movable about the length of the spa to provide  
8 stimulation to most of the body. Means for heat exchange are provided for controllably  
9 adjusting the temperature of the water emanating from the jets.

10 Accordingly, it is an objective of the instant invention to teach the  
11 stimulation of several biological senses in an enclosed environment for  
12 therapeutic results.

13 It is a further objective of the instant invention to teach the use of a cabinet  
14 enclosing a person in a selected environment which includes stimulation of the  
15 auditory, olfactory, optic and tactile senses.

16 It is yet another objective of the instant invention to teach the application of  
17 selected aromas, sounds, pictures and physical contact to a person in a  
18 particular program.

19 Other objectives and advantages of this invention will become apparent from the  
20 following description taken in conjunction with the accompanying drawings  
21 wherein are set forth, by way of illustration and example, certain embodiments  
22 of this invention. The drawings constitute a part of this specification and

1 include exemplary embodiments of the present invention and illustrate various  
2 objects and features thereof.

#### 3 4 BRIEF DESCRIPTION OF THE FIGURES

5 FIG. 1 shows a perspective of the spa of the invention;

6 FIG. 2 shows a perspective with exterior portions and the lid removed;

7 FIG. 3 shows another perspective with the lid in phantom lines;

8 FIG. 4 shows a side view with interior components in phantom lines;

9 FIG. 5 shows an exploded view of the fluid array; and

10 FIG. 6 shows an exploded view of the fluid head.

#### 11 12 DETAILED DESCRIPTION OF THE INVENTION

13         The spa capsule 10 of FIG. 1 has a cabinet 11 and a lid 12. As shown, the  
14 cabinet and top are egg-shaped in the closed position defining an enclosed  
15 space. The peripheral edges 13 and 14 of the lid 12 and cabinet 11 contact each  
16 other and form a seal when the lid is closed. The smaller end of the egg-shaped  
17 spa accommodates the feet of a person lying inside the spa. The lid is somewhat  
18 shorter than the cabinet and the larger end of the lid is open. The opening 15  
19 allows the person in the spa to communicate with the space outside the spa. The  
20 cabinet and lid may be molded from a high strength polymer or made from another  
21 lightweight material, such as aluminum or other metal.

22         The cabinet and top are hinged together at 16 to allow a person to enter the spa

1 when the lid is in the open or raised position. The hinge may have a spring  
2 loaded mechanism 61 such that the top will automatically raise when lifted from  
3 the cabinet. When raised it will remain so until force is applied to close the  
4 lid. The cabinet is mounted on swiveling casters 59 which permit maneuvering the  
5 spa in confined spaces.

6 Inside the cabinet is a bed 17 for supporting a supine person. As seen in FIG.  
7 2, the head end of the bed has an aperture 18 which accommodates the face of a  
8 person when lying in the prone position. On both sides of the aperture 18, there  
9 are arm rests 23 and 24. The support surfaces of the arm rests are positioned  
10 somewhat lower than the central portion of the bed containing the aperture 18 to  
11 permit a less stressful orientation for the shoulders in the prone position. The  
12 bed may include a pad 19 for comfort. The bed 17 and pad 19 may have an  
13 electrically powered vibratory function (not shown).

14 In FIGS. 2 and 3, the bed 17 is shown inclined from a lower foot end to a higher  
15 head end. The foot end of the bed is designed with a space 20 to receive the  
16 feet of a prone person below the end of the bed in a natural posture. The  
17 aperture 18 also provides a padded support surface around the face without  
18 placing stress on the neck and back.

19 As shown in FIG. 4, under the aperture 18 is a mirror 21 which has a hinge  
20 connection 22 to the arm rests 23 and 24. The mirror 21 has a rotational  
21 adjustment 25 on either end of the hinge to change the angle of the mirror about  
22 the hinge 22. Mounted on shelf 26 of the cabinet 11 is an electronic screen 27.

1 This device may be a conventional TV set or a CRT (cathode ray tube) or an LCD  
2 (liquid crystal display) connected to a tuner or VCR controlled inside the  
3 cabinet or outside or both. By adjusting the angle of the mirror different sized  
4 prone persons may view selected visual images.

5 The cabinet 11 and lid 12 may have multiple audio speakers 28 or a headphone  
6 jack 29. The speakers or headphones may be powered by components inside the spa  
7 (not shown) or may be connected to a sound system outside the spa. In any event,  
8 the person inside the spa may select the sounds to be transmitted to the spa.  
9 The selection may be done by a channel selector on the bed (not shown) or the  
10 sounds may be preselected before entry into the spa 10.

11 The lid 12 has a support system 30 extending throughout the major portion of  
12 it's length. An array 31 of nozzles 32 is suspended from this support system 30.  
13 The array 31 moves back and forth along the length of the support system 30 by a  
14 motorized pulley 33 and endless flexible drive 34. The control of the array and  
15 nozzles may be a simple timing device or a microprocessor 60. As the array moves  
16 lengthwise, the nozzles 32 deliver pulses of fluid into the enclosed space. The  
17 nozzles may be opened and closed to deliver the pulses or the pulses may be  
18 delivered through open nozzles by a pressure pump 35. The speed of the movement  
19 of the array and the timing of the pulses may be preselected to include a  
20 particular pattern or random application. Also, the operation of the nozzles,  
21 within the array, may be preselected.

22 The fluid may be a liquid or gas and the fluid may be scented or contain

1 aromatic ingredients. The spa may also have receptacles for vials of aromatic  
2 substances. The vials may emit various fragrances to simulate different natural  
3 environments or particular scents desired by the user.

4 In the event the fluid is a liquid, the cabinet may have a thin fabric or film  
5 shroud 40 to be placed over the user. The longitudinal edges of the shroud may  
6 be attached to the sides of the bed 17 to seal the components of the spa.

7 As illustrated in FIGS. 2, 3, and 5, the massage liquid is separated from the  
8 user by a thin, flexible, impervious liner 61 continuously sealed to the outer  
9 ring 63 by intermediate retainer ring 62. A rigid curved plastic plate 64  
10 maintains the shape of the outer ring 63 and the retainer ring 62. The plate 64  
11 has large openings 65 and 66 to permit passage of the massage liquid  
12 therethrough. The plate 64 is sealed to the lower jet housing 67 and the nozzles  
13 32 are exposed through the openings 65 and 66. The lower jet housing 67 is  
14 connected to the upper jet housing 68 through a high pressure seal. The upper  
15 jet housing is connected to the liquid supply line 40. The upper jet housing  
16 contains a distribution channel 71 connecting the liquid inlet to the nozzles in  
17 the lower jet housing 67. The upper jet housing is slidably attached to the  
18 support system 30 by a cap 72, as shown in FIG. 5.

19 The massage liquid is removed from the lower portions of the array 31 by drain  
20 lines 36 and 37 and returned to the holding tank 38 for recycling. If recycling  
21 is not desired, the holding tank 38 may be connected to a drain. Depending on  
22 the installation, the spa may be used, without the impervious liner 61, in a



1 manner that permits the fluid to impact directly on the skin of the user.

2 In FIGS. 2 and 3, the array 31 has a set of inner nozzles 38 and outer nozzles  
3 39. The supply line 40 is connected to a fluid pump 42 which supplies pressure  
4 for the liquid jets. The pump 42 is connected to the holding tank 38 by a short  
5 connector 43. The supply line and the drain lines each have a length to  
6 accommodate the greatest travel of the array 31. In order to provide the user with a greater  
7 degree of control over the temperature of the water emanating from the liquid jets, a heat  
8 exchanger 80 is provided, as illustrated in Figure 2. Heat exchanger 80 has an inlet 81 and  
9 an outlet 82, to which are attached supply lines 83 and 84, respectively. Line 84 is supplied  
10 with an in-line pump 86 of any suitable type for providing a flow of water from holding  
11 tank 38, through heat exchanger 80, and back to holding tank 38. While any type of heat  
12 exchange means is contemplated for use in the invention, the illustration utilizes a gas/  
13 liquid contact heat exchanger, wherein an auxiliary fan 85 is provided for directing air over  
14 the surface of the heat exchanger 80. The air, which in this illustration provides cooling,  
15 may be passively exchanged by means of one or more venting means provided within the  
16 lower portion of cabinet 11, or may be actively exchanged by positioning the fan within a  
17 wall portion of the cabinet 11 or by providing auxiliary ducting to the exterior of the  
18 cabinet 11. Liquid/liquid heat exchangers, with or without additional heating or chilling  
19 capacity are further contemplated, as equivalent means of temperature control. Via this  
20 incorporation of heat exchange means, the fluid temperature may be controllably adjusted  
21 at the direction of the user, so as to provide a heating and/or cooling effect. The flexible  
22 drive 34, shown in FIG. 6, moves the array 31 along the support system 30 which is formed

1 with rods 47 and 48 suspended from the interior of the lid 12. The array slides along the  
2 rods on bearings 49 and 50. The flexible fluid supply lines are not shown but the  
3 connection to the array is at the ports 51 and 52. The upper section 53 of the array is sealed  
4 with the lower section 54 by O rings 55. The upper and lower sections are fastened together  
5 by fasteners 56. The inner nozzles 38 and outer nozzles 39 are shown as supplied by  
6 separate channels 57 and 58 formed in the array.

7 The spa of this invention may be used in health clubs, hospitals, assisted care  
8 facilities, hotels, other places of business, and the home. The user would  
9 select among the different features of the machine to develop a favorite  
10 combination of sights, sounds, smells, and massage. Once inside the spa, the  
11 user would only need to relax.

12 All patents and publications mentioned in this specification are indicative of the  
13 levels of those skilled in the art to which the invention pertains. All patents and  
14 publications are herein incorporated by reference to the same extent as if each individual  
15 publication was specifically and individually indicated to be incorporated by reference.

16 It is to be understood that while a certain form of the invention is illustrated, it is  
17 not to be limited to the specific form or arrangement herein described and shown. It will  
18 be apparent to those skilled in the art that various changes may be made without departing  
19 from the scope of the invention and the invention is not to be considered limited to what is  
20 shown and described in the specification.

21 One skilled in the art will readily appreciate that the present invention is well  
22 adapted to carry out the objectives and obtain the ends and advantages mentioned, as well

1 as those inherent therein. The embodiments, methods, procedures and techniques  
2 described herein are presently representative of the preferred embodiments, are intended to  
3 be exemplary and are not intended as limitations on the scope. Changes therein and other  
4 uses will occur to those skilled in the art which are encompassed within the spirit of the  
5 invention and are defined by the scope of the appended claims. Although the invention has  
6 been described in connection with specific preferred embodiments, it should be understood  
7 that the invention as claimed should not be unduly limited to such specific embodiments.  
8 Indeed, various modifications of the described modes for carrying out the invention which  
9 are obvious to those skilled in the art are intended to be within the scope of the following  
10 claims.

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